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What Happens after the ‘Daddy Months’? Fathers’ Involvement in Paid Work, Childcare, and Housework after Taking Parental Leave in Germany

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Abstract

The German parental leave reform of 2007 created a new incentive for men to take parental leave by introducing ‘daddy months’: 2 months of well-remunerated leave exclusively reserved for fathers. Against the backdrop of the reform, this study examines how fathers’ uptake of parental leave affects the amount of time they spend on paid work, housework, and childcare after the leave has ended. It investigates whether the effect of parental leave differs by the length of leave taken and by whether fathers took the leave alone or at the same time as their partners. Using data from the German Socio-Economic Panel from 2006 to 2012 and Families in Germany from 2010 to 2012, the results of fixed-effects regressions indicate that fathers who took parental leave subsequently reallocated their time from work to home. They reduced their working hours and increased their involvement in childcare even after short and joint periods of parental leave. But only those who took >2 months of leave or were on leave while their partner was working subsequently increased their participation in house-work. Hence, fathers increased their involvement in childcare already after short leaves, whereas enhanced gender equality in couples’ division of labour especially emerged after longer or solo leaves.

Introduction

Over the past two decades, several European countries have introduced parental leave schemes in which a portion of paid parental leave is reserved for the father (O’Brien and Moss, 2010). These ‘daddy months’ have two aims: strengthening the father-child relationship and promoting gender equality in couples (Bekkengen, 2006). During parental leave, fathers have the opportunity to bond with their children, which can form the basis for fathers’ long-term involvement in childcare. Increased paternal involvement in childcare has been shown to have multiple benefits for both fathers and children. In children, it is associated with increased cognitive competences, increased empathy, and fewer behavioural problems (Lamb, 2010). Fathers who are more involved with their children have been found to

have happier marriages, experience better health, and to be more active in their communities (Snarey, 1993; Knoester, Petts and Eggebeen, 2007).

Moreover, fathers' use of parental leave may be conducive to increased gender equality in couples. The birth of a child often leads couples to adopt a more traditional division of labour: By taking parental leave and reducing their working hours, mothers shift time from work to home after childbirth, whereas most fathers leave their time allocation unaltered (Craig and Mullan, 2010; Grunow, Schulz and Blossfeld, 2012; Kùhhirt, 2012). However, when fathers take parental leave, they may share the additional burden of childcare and housework more equally with their partners.

Taking the introduction of two daddy months in Germany as a starting point, this study asks whether fathers who took parental leave subsequently reallocated their time from paid work to housework and childcare. In 2007, low

flat-rate parental leave benefits were replaced with earnings-related benefits at 67 per cent of the previous income, and 2 of the 14 months of this paid parental leave were reserved exclusively for fathers. After the reform, the proportion of fathers who took parental leave increased from 3.5 per cent in 2006 to 21 per cent in 2008, and is currently close to 30 per cent (BMFSFJ, 2012). But does taking parental leave also have a lasting effect on fathers' time allocation even after they return to work?

Previous research has shown that fathers who took (longer periods of) parental leave were subsequently more involved in childcare than fathers who did not; this was the case in Sweden (Haas and Hwang, 2008), the United Kingdom (Tanaka and Waldfogel, 2007), the United States (Nepomnyaschy and Waldfogel, 2007), and Germany (Schober, 2014), although in the German study, the effect was restricted to the first year after childbirth. The evidence on housework is more mixed. Whereas Schober found no effect of parental leave in Germany, Kotsadam and Finseraas (2011) showed that Norwegian fathers increased their participation in doing the laundry after the introduction of the daddy month. Concerning working hours, Cools, Fiva and Kirkebøen (2015) found no evidence that uptake of parental leave increased part-time work among Norwegian fathers. But Rege and Solli (2013) found a negative effect of parental leave on earnings, which they assumed was the result of a reduction in working hours. In Sweden, the length of leave was negatively associated with working hours (Duvander and Jans, 2009).

These previous studies used two basic types of research designs. The first design used cross-sectional data and inferred an effect of parental leave by comparing fathers who took (different lengths of) parental leave with fathers who did not take leave (Nepomnyaschy and Waldfogel, 2007; Tanaka and Waldfogel, 2007; Haas and Hwang, 2008; Duvander and Jans, 2009). This approach makes it difficult, however, to distinguish a causal effect of parental leave on men's time allocation from a spurious effect caused by the selection of highly involved fathers into parental leave. The second design used the introduction of daddy month(s) as an instrument to establish causality (Kotsadam and Finseraas, 2011; Rege and Solli, 2013; Schober, 2014; Cools, Fiva and Kirkebøen, 2015). Studies in this second category were better able to establish causality, but as a drawback, they did not capture differences between fathers with different leave-taking behaviour.

Combining the strengths of the two previous approaches, this study extends the literature in three ways. First, it uses panel data to compare fathers' time allocation before taking parental leave to their time allocation after taking leave based on fixed-effects regression models to estimate whether fathers change their time allocation after taking parental leave. Second, this study explores not only whether the length of leave matters but also whether fathers who took parental leave simultaneously with their partners differed from fathers who took solo leave. Finally, whereas most previous research has concentrated on individual dimensions of time use, this study analyses the relation between parental leave and fathers' time spent on three activities—paid work, housework, and childcare—to provide a broader picture of whether fathers shift their time allocation from work to home after parental leave.

The Policy Context

West Germany long had one of the most entrenched male breadwinner cultures in Europe. Policies such as joint taxation, coverage of dependents in the public health insurance scheme, and long periods of parental leave with low benefits encouraged a division of labour in which men specialize in paid work and women in homemaking (Kreyenfeld and Geisler, 2006; Cooke, 2011). With German reunification in 1990, West German policies went into effect in East Germany, as well.

Prior to 2007, parents could take parental leave for 36 months, and they received means-tested parental leave benefits for the first 24 month at a flat rate of 300 euros. Even then, fathers were eligible to take parental leave. They could do so simultaneously or alternately with their partners and also had the option of taking part-time leave while working up to 30 h per week

(Gerlach, 2010). Yet, <5 per cent of fathers used parental leave.

This changed with the parental leave reform of 2007, which introduced earnings-related parental leave benefits. Parents now receive 67 per cent of their previous earnings (65 per cent since 2011) for the first 12 months of parental leave, and can take unpaid leave for another 24 months afterwards. Furthermore, parents receive paid leave for two additional months if each partner takes at least 2 months of leave. Thus, 2 months of well-remunerated parental leave are reserved for the father and forfeited if he does not use them. After the reform, the proportion of fathers who took parental leave increased from 3.5 per cent in 2006 to 21 per cent in 2008, and is currently close to 30 per cent. Fathers who took paid parental leave did so on average for 3 months (Statistisches Bundesamt, 2013). The average duration of paid leave for mothers whose partners also took parental leave was 11 months (Statistisches Bundesamt, 2012a). There are no statistics on uptake of unpaid leave.

In addition, a law dating from 2005 aimed at expanding public childcare for children under the age of 3 years, so that parents can place their children in public day care after the leave has ended. The proportion of children aged 0–2 years in public childcare increased from 16 per cent in 2007 to 28 per cent in 2012 (Statistisches Bundesamt, 2012b).

Theoretical Approach

Two different strands of theory argue that parental leave matters for fathers' time allocation: the transformative perspective, and the bargaining perspective. The transformative perspective is commonly used in research on fatherhood, whereas the bargaining perspective is prominent in research on couples' division of labour. Both perspectives hypothesize that fathers reallocate their time from work to home after having taken parental leave.

The transformative perspective (Snarey, 1993; Knoester and Eggebeen, 2006; Knoester, Petts and Eggebeen, 2007) holds that parenthood presents developmental challenges to adults, and that meeting these challenges can permanently transform men's lives. Being responsible for a child can encourage fathers to reevaluate their values and priorities, potentially leading to profound reorganization of life and personal growth.

This study applies the transformative perspective to parental leave and argues that not only the transition to parenthood in general but especially the experience of taking parental leave can have a transformative effect on fathers' priorities and hence their time allocation. Exiting work temporarily gives fathers the opportunity to bond with their children and to develop the necessary competence and confidence in parenting (Rehel, 2014). Taking parental leave may also transform fathers' gender role attitudes (Tanaka and Waldfogel, 2007; Haas and Hwang, 2008) because they experience parenting as a learnable skill rather than as a natural ability of mothers. Because of these experiences, fathers may develop a greater desire for work–family balance (Pfahl and Reuyß, 2009; Rehel, 2014).

We therefore expect that taking parental leave permanently shifts men's priorities from work to home, leading fathers to work fewer hours after parental leave and to maintain a higher involvement in childcare and housework. The longer the duration of fathers' parental leave, the stronger we expect the transformative impact to be. Furthermore, we expect greater shifts in time allocation among fathers who take leave alternately with their partner than among those who take leave simultaneously. Here, we assume that when both parents are at home together, fathers are more likely to remain the secondary caregiver. When fathers take solo leave, however, they have full responsibility at home during the leave and may maintain a higher involvement in housework and childcare after the leave has ended (Possinger, 2013).

Bargaining theories hold that couples negotiate over the household division of labour (e.g., Evertsson and Nermo, 2007). The partner with the better economic resources has greater bargaining power and can thereby negotiate his/her way out of domestic work. From a dynamic perspective, couples renegotiate their division of labour whenever there is a change in the demand for paid and unpaid work or in the couple's relative resources. One crucial turning point is the transition to parenthood. Children increase the demand for childcare and housework. Furthermore, the birth of a child often weakens the mother's bargaining position. After childbirth, mothers usually interrupt employment and then often return to work only part-time, which reduces their economic resources and weakens their bargaining power. Fathers can use this as an argument to impose the additional responsibilities of housework and childcare on their partner.

The use of parental leave by fathers, however, alters parents' relative resources. If fathers take parental leave simultaneously with mothers, both partners temporarily have a reduced amount of resources available, and this in turn reduces fathers' relative advantage. If fathers take leave alternately with their partners, the responsibility for housework and childcare is temporarily shifted

to the mother for the duration of her parental leave. But once the mother returned to work and the father is at home, men find themselves in the weaker bargaining position. The mother now has greater economic resources, and part of her domestic responsibilities are shifted to the father (Possinger, 2013). Thus, we hypothesize that fathers' use of parental leave decreases the risk of traditionalization associated with parenthood.

The expected outcome is the same under the bargaining perspective as under the transformative perspective, with the difference that with the latter, fathers reallocate their time because they want to, whereas with the former, it is because they have to. Which perspective is more appropriate probably depends on the indicator studied. Qualitative research suggests that fathers *want* to be more involved in childcare (Pfahl and Reuyß, 2009), whereas the case may be different for housework.

Finally, it is possible that there is no causal effect of parental leave on fathers' time allocation. Associations between parental leave and fathers' time allocation could also result from the selection of specific fathers into parental leave. Previous research has shown that fathers' uptake of parental leave varies by socio-demographic factors such as fathers' level of education, income, the number of children, and region of residence (Geisler and Kreyenfeld, 2011, 2012; Trappe, 2013). Furthermore, a specific group of men may exist who are more committed to family life and less committed to paid work than other men. This commitment to family life is reflected in both their uptake of parental leave and their reallocation of time from work to home after having children. Any positive correlations found between fathers' use of parental leave and their subsequent time allocation would then be spurious, the result of underlying differences in commitment to work and family life.

Data and Methods

This analysis combines data from two German household panel studies, the Socio-Economic Panel (SOEP) and Families in Germany (FiD). The SOEP is representative for the adult population living in private households in Germany. It started in West Germany in 1984 and in East Germany in 1990 (Wagner, Frick and Schupp, 2007). FiD is a supplement to the SOEP that provides larger case numbers of families. It started in 2010 with the aim of providing a comprehensive evaluation of German family policies. To do so, it sampled four types of families: families with young children born since 2007, large families with three or more children, low-income families, and single-parent families. In both studies, households were randomly selected using a multi-stage stratified sampling procedure, and all adult household members were interviewed on an annual basis. The two data sets are similar in content and structure, and the data are provided with weights for analyses using the combined data.

This study used SOEP data from 2006 to 2012 and FiD data from 2010 to 2012: the year prior to and the years since the parental leave reform. The inclusion of data from 2006 was necessary to observe time use before parental leave for fathers with children born in 2007. The sample for this study included fathers of children born since 2007. We want to observe how working fathers change their time allocation after taking parental leave. Therefore, it is important to observe the fathers' time use before and after they took leave. The sample thus only contained observations of fathers who were observed at least twice. For these fathers, all observation-years where they lived together with the child's mother and worked were included in the sample, except observation-years where fathers were on (part-time) parental leave at the time of interview. Another restriction is that fathers have already had at least one child in the first year of observation, meaning that the effect of parental leave is not confounded by the transition to parenthood. As outlined above, family-oriented fathers may be particularly likely to take parental leave but may also reallocate their time as soon as they have children. Excluding observations before the transition to parenthood ensures that observed changes in fathers' time use after parental leave are not in fact the result of the transition to parenthood.¹

Of the 1,926 fathers, 202 took at least 1 month of parental leave. The proportion of fathers who took parental leave in this sample is thus lower than the population average. Of the fathers who took parental leave, 116 had already taken parental leave in their first year of observation. These were mainly fathers from the FiD sample, as these data were collected for the first time in 2010. Hence, the estimates of how fathers' time allocation changed after parental leave were based on the 86 fathers who were observed before and after taking parental leave. The numbers are large enough to allow some first analyses of the effects of parental leave, but limit the possibilities for testing whether the effect of parental leave varies across subgroups of fathers.

Variables

Dependent variables: The three dependent variables are fathers' time allocation to paid work, housework, and

childcare. Hours in paid work are measured as fathers' actual weekly working hours including overtime. Hours in childcare and housework refer to the number of hours men report spending on these activities on a normal weekday. The question read 'How many hours do you spend on the following activities on a typical weekday?', and the activities included 'housework (washing, cooking, cleaning)' and 'childcare'. Housework hence covers the routine, female-typed tasks that German men are least likely to perform (Tai and Treas, 2013), whereas no specific tasks were given as examples for childcare.

Explanatory variables: Three measures are derived from fathers' reported monthly employment status to capture fathers' leave-taking behaviour. The first indicator is a dummy variable indicating whether a father ever took parental leave for 1 month or more. The second indicator captures different lengths of parental leave, distinguishing between one or two daddy months and longer periods of leave. The third indicator considers whether fathers took their entire leave simultaneously with their partner or whether they took at least 1 month of leave alone while the mother worked. If fathers took parental leave for more than one child, all their parental leave episodes were added up to construct the indicators.²

Control variables: All models control for number of children (one, two, and three or more), the age of the youngest child, marital status (married or cohabiting), level of education (basic (Hauptschule with or without vocational training), secondary (Realschule or Abitur with or without vocational training), and tertiary education according to the Casmin Classification), fathers' net monthly income, partners' employment status (full-time (>30 h), long part-time (20–30 h), short part-time (1–19 h), not working), year (dummies), and region of residence (16 Bundesländer). The models estimating time spent doing housework and childcare also control for men's working hours.

Methods

This study uses fixed-effects panel regression models to estimate how fathers change their time allocation after taking parental leave. In fixed-effects regression, the individual-specific mean of each variable is subtracted from its actual value in each period, which means that the fixed-effects estimators are based solely on intra-individual change. Therefore, the estimates of the relationship between parental leave and fathers' time allocation are based on differences in fathers' average time use before and after taking parental leave, net of control variables. This procedure nets out the influence of time-invariant observed and unobserved traits that may be associated both with fathers' uptake of parental leave and with their time allocation. This is important because fathers who take parental leave differ from fathers who do not in several characteristics, of which some—e.g., commitment to family life—are unobserved.

Observations of fathers who do not take parental leave are used to control for time trends that affect all fathers equally. For example, Schober (2014) found that even fathers who did not take parental leave increased their participation in childcare after the 2007 parental leave reform. Nonetheless, the generalizability of results should be regarded with caution as the models can only estimate how uptake of leave affects those fathers that select into parental leave.

Fixed-effects models eliminate bias resulting from time-constant heterogeneity, but they may still be biased by endogeneity as a result of time-varying heterogeneity or reverse causality. To reduce the bias of time-varying heterogeneity, the models control for several time-varying covariates. It would be desirable to also include interaction effects between the control variables and up-take of parental leave. However, given the small number of fathers who take parental leave, this is currently not possible.³ Furthermore, the causal relation between some of the control variables and the three dependent variables is not evident, which may introduce reverse causality to the models. For example, fathers' involvement at home may enable mothers to work more, result in a wage penalty, or affect the decision to have another child. The causal link between fathers' paid and unpaid work is also unclear: long working hours might limit the time fathers have available for unpaid work, whereas high involvement in childcare and housework might restrict the time fathers can spend in paid work (see Evertsson and Nermo, 2004). As a robustness test, I therefore compare the results of the full models to more parsimonious models that do not control for partners' employment status, number of children, age of the youngest child, income, and—for models on childcare and housework—fathers' working hours.

The data are weighted using the person-specific weights that are provided for analyses combining SOEP and FiD data. Households in the sample have different sampling probabilities, for example, because SOEP over-samples Eastern Germans and FiD only targets certain groups of families. Therefore, and to adjust for non-response and panel attrition, it is necessary to weight the data to obtain unbiased estimates. A drawback of weighting, however, is that the estimators are less efficient, i.e., the standard errors are larger. Using weights therefore results in conservative tests (Pfeffermann,

1996). As fixed-effects models require the weights for each person to be constant across time, the analyses use the weights for the first year a person appears in the sample.

Results

Table 1 displays descriptive statistics for the first- and last-year fathers were in the sample—separately for fathers who took parental leave during the observation period and fathers who did not. The last column of Table 1 also displays average values across all fathers and years. Fathers who took parental leave during the observation period reduced their working hours by >3 h per week, increased their childcare time by >1.5 h per day, and slightly increased their involvement in domestic work. Fathers who did not use parental leave, by contrast, increased their weekly working time on average by 1 h over the observation period, only slightly increased their involvement in childcare, and did not change their involvement in housework. The descriptive statistics provide little evidence that fathers who take parental leave are more involved in childcare and housework and less involved in paid work from the start. In fact, in the first year of observation, fathers who eventually took parental leave had longer working hours and were less involved in childcare than fathers who did not later take parental leave.

In line with previous research, fathers who took parental leave were more highly educated, more likely to have only one child, and more likely to live in Eastern Germany (Geisler and Kreyenfeld, 2011, 2012). Furthermore, the partners of fathers who took parental leave were less likely to be non-employed and more likely to work full-time than the partners of other fathers, both in the first and last year of observation. They were also more likely to start working during the observation period.

Among those fathers who took parental leave, about half only took 1 or 2 months, whereas the other half

Table 1. Descriptive statistics: percent /means and standard deviations

	Took leave		Did not take leave		Full sample
	First year	Last year	First year	Last year	All years
Working hours (week)	46.79 (9.58)	43.39 (10.28)	43.61 (9.90)	44.48 (9.39)	44.40 (9.52)
Childcare hours (day)	0.95 (1.22)	2.66 (2.71)	2.01 (2.48)	2.31 (2.40)	2.14 (2.25)
Housework hours (day)	0.74 (0.60)	0.90 (0.73)	0.73 (0.71)	0.72 (0.67)	0.71 (0.73)
Education					
Lower education	0.11	0.11	0.28	0.28	0.25
Medium education	0.41	0.41	0.45	0.44	0.46
Higher education	0.48	0.48	0.27	0.28	0.29
Married	0.67	0.92	0.80	0.89	0.85
Number of children					
1 child	0.83	0.40	0.58	0.33	0.41
2 children	0.10	0.46	0.31	0.47	0.43
3+ children	0.03	0.14	0.11	0.20	0.16
Age of the youngest child	1.07 (2.71)	2.62 (1.20)	1.73 (1.88)	2.54 (1.52)	2.05 (1.80)
Partner's employment status					
Partner not working	0.48	0.30	0.53	0.50	0.50
Partner short part-time	0.02	0.13	0.12	0.17	0.17
Partner long part-time	0.10	0.21	0.11	0.14	0.13
Partner full-time	0.40	0.36	0.24	0.19	0.20
Net monthly income in 1,000 €	2.20 (1.10)	2.62 (1.37)	2.08 (1.25)	2.32 (1.42)	2.19 (1.24)
Eastern Germany	0.36	0.38	0.15	0.15	0.17
Parental leave use					
Took leave 1–2 months		0.47			0.05
Took longer leave		0.53			0.03
Joint leave		0.55			0.05
Solo leave		0.45			0.03
N	86	86	1,724	1,724	5,594

All values are weighted.

took longer periods of leave. Fifty-five per cent of fathers took all their leave simultaneously with their partner, whereas 45 per cent took at least 1 month of leave while their partner was working. A comparison with official statistics from 2010 reveals that fathers who took only the two daddy months were under-represented in this sample compared with the national average of three quarters. Furthermore, fathers in this sample took solo leave more often than the national average of one third (Statistisches Bundesamt, 2012a). This could result from differences in classifying those fathers who took part of the leave simultaneously with their partner and another part alone: Official statistics classify these fathers as taking leave jointly with the mother, whereas they were counted here as taking solo parental leave. Cross-tabulating length of leave with solo/joint leave reveals that roughly half of the fathers on both short and long leave were on joint parental leave, whereas the other half were on solo leave.

Multivariate Analyses

The results of the fixed-effects regression models on fathers' weekly working hours (Table 2) support the expectation that fathers reduce their working hours after parental leave. On average, fathers worked 4 h less per week after taking parental leave than before the leave. Fathers who took only 2 months of parental leave or who were on leave simultaneously with their partner reduced their working hours by 3 h, whereas fathers who took longer or solo leave reduced their working hours by 5 h. Hence, the point estimates suggest that fathers reduced their working time more after longer periods of leave or after taking on greater responsibility for childcare during their leave because their partner was working. However, given the small number of fathers who took parental leave, the 95 per cent confidence intervals are rather wide and the confidence intervals for long and short periods of leave as well as solo and joint leave overlap considerably. The effects should therefore be interpreted with caution.⁴

As displayed in Table 3, fathers who took parental leave also spent on average one more hour per weekday on childcare than they did before taking leave. This holds for fathers on short leave as well as for fathers on long leave, and for fathers who took leave simultaneously with their partner as well as for those who alternated with their partner in taking leave. The effect sizes were somewhat larger for fathers who took longer or solo leave, but the differences from fathers who took shorter or joint leave were not statistically significant. Hence, parental leave is positively associated with fathers' involvement in childcare irrespective of the length of leave taken or level of responsibility held during the leave.

As displayed in Table 4, fathers on average did not change the amount of time spent on housework after taking parental leave. But distinguishing between the different types of leave revealed that fathers increased their housework time after long and solo parental leave.

Supplementary Analyses

Several additional analyses were performed to check the robustness of the results. The results of these additional analyses are displayed as supplementary online material. Supplementary Tables S5–S7 in the online material present the results of the more parsimonious models described in the methods section. Findings on the effect of parental leave are robust in these models. Supplementary Tables S8–S10 in the online material explored whether the shift in fathers' time allocation persists, because Schober (2014) found that fathers' increased involvement in childcare was restricted to the first year after parental leave. In Supplementary Tables S8–S10, all effects of parental leave were estimated separately for the first and subsequent years after the leave. Most coefficients were of similar magnitude in the first

Table 2. Fixed-effects analysis of fathers' weekly working hours: b-coefficients and 95% confidence intervals

	M1		M2		M3	
	b	95% CI	b	95% CI	b	95% CI
After parental leave	−4.12***	(−6.30;−1.94)				
Took leave 1–2 months			−3.19**	(−5.52;−0.85)		
Took leave >2 months			−5.29**	(−9.26;−1.31)		
Joint leave					−3.39**	(−5.60;−1.18)
Solo leave					−5.25*	(−10.29;−0.20)

Controlling for number of children, age of the youngest child, marital status, education, partner's employment status, working hours, net monthly income, region, and year, all values are weighted.

*** $p < .001$, ** $p < .01$, * $p < .05$, + $p < .1$.

Table 3. Fixed-effects analysis of fathers' daily hours spent doing childcare: b-coefficients and 95% confidence intervals

	M1		M2		M3	
	b	95% CI	b	95% CI	b	95% CI
After parental leave	1.08***	(0.54;1.62)				
Took leave 1–2 months			0.89***	(0.34;1.42)		
Took leave >2 months			1.32***	(0.52;2.14)		
Joint leave					0.90***	(0.39;1.41)
Solo leave					1.37**	(0.44;2.30)

Controlling for number of children, age of the youngest child, marital status, education, partner's employment status, working hours, net monthly income, region, and year, all values are weighted.

*** $p < .001$, ** $p < .01$, * $p < .05$, + $p < .1$.

Table 4. Fixed-effects analysis of fathers' daily hours spent doing housework: b-coefficients and 95% confidence intervals

	M1		M2		M3	
	b	95% CI	B	95% CI	b	95% CI
After parental leave	0.18	(−0.04;0.40)				
Took leave 1–2 months			0.02	(−0.15;0.18)		
Took leave >2 months			0.40*	(0.04;0.75)		
Joint leave					0.11	(−0.20;0.42)
Solo leave					0.30**	(0.09;0.50)

Controlling for number of children, age of the youngest child, marital status, education, partner's employment status, working hours, net monthly income, region, and year, all values are weighted.

*** $p < .001$, ** $p < .01$, * $p < .05$, + $p < .1$.

and subsequent years after the leave. Some even became stronger over time. Only the effect of short parental leave on working hours decreased in magnitude and became statistically insignificant after the first year. Hence, in general, fathers' changes in time use persist for at least 2 or 3 years.

Additional analyses estimated the effect of taking parental leave on fathers' *share* of childcare and housework rather than their absolute number of hours spent on both activities (Supplementary Tables S11 and S12 in the online material). The results were similar to the ones presented in Tables 3 and 4, although slightly weaker. Fathers increased their share of childcare after taking all but short periods of parental leave, and increased their share of housework after taking solo parental leave.

The results of the fixed-effects regressions were also compared with the results of ordinary least squares (OLS) models to determine the extent of selection (Supplementary Tables S13–S15 in the online material). For these analyses, the effects of taking parental leave were based on all 202 fathers who took parental leave rather than only on the 86 fathers who were observed before and after taking leave. According to the OLS models, fathers who took parental leave worked 2 h less per week than fathers who did not, and fathers who were on long or solo leave did more housework. But there was little evidence that fathers who took parental leave spent more time on childcare than fathers who did not. Hence, contrary to expectations, the OLS effects were weaker than the fixed effects. As already foreshadowed by the descriptive statistics in Table 1, the data thus provide no evidence that fathers who took parental leave were already less committed to work and more committed to childcare and housework before they went on leave. All in all, the supplementary analyses provide further evidence that fathers who take parental leave reallocate their time from work to home, especially after long or solo parental leave.

Discussion and Conclusions

Previous research has argued that family policies influence parents' division of labour and fathers' time with children. In particular, long parental leaves for mothers reinforce a traditional division of labour (Hook, 2010). In Germany, long leaves of 3 years after childbirth in combination with a joint taxation system have long favoured the male-breadwinner model. Yet, with the

parental leave reform of 2007, German family policy has shifted towards supporting a dual-earner, dual-carer model. Introducing earnings-related parental leave benefits and reserving 2 months of paid parental leave for the father incentivized fathers to share the leave with their partners.

This study asked whether men reallocate their time from work to home after taking parental leave. The results showed that fathers reduced their weekly working hours and took on more childcare and housework after they returned from parental leave. This is in line with the transformative perspective's expectation that the experience of taking parental leave strengthens fathers' involvement in family life at the expense of time spent at work. However, it may also be that fathers' reallocation of time is due to a reduction in their bargaining power after parental leave. This study cannot discriminate between these two possible mechanisms. Results from qualitative research suggest that fathers who took parental leave want to be less involved in paid work and more involved in childcare (Pfahl and Reuyß, 2009), but the case may be different regarding housework.

When asked about their motives for taking parental leave, two thirds of fathers said that developing a close relationship with their children was very important to them. Only 20 per cent said that they wanted to support their partner in her career (Pfahl and Reuyß, 2009). This suggests that child-orientation is a stronger motive for fathers' uptake of parental leave than aspirations of gender equality (Bekkengen, 2006).

In line with these motives, fathers reduced time in paid work and spent more time with their children even after short and joint periods of parental leave. However, fathers only increased the time spent on housework after they took either more than 2 months of leave or solo leave. Hence, children benefit from all types of leave, whereas enhanced gender equality in couples especially emerged after longer or solo leaves. This is in line with Coltrane's (1997) finding that fathers who become more involved at home often begin with childcare, and only over time become more involved in housework.

The results underscore the importance of distinguishing between different parental leave patterns. Whereas previous research has already established that the length of parental leave matters for fathers' subsequent working hours and participation in childcare (Nepomnyaschy and Waldfogel, 2007; Haas and Hwang, 2008; Duvander and Jans, 2009), this study is the first to show differences between solo and joint leaves. Fathers on solo leave have to take full responsibility at home and change their daily routines more profoundly than fathers who take leave simultaneously with their partners and likely remain the child's secondary caregiver. These more profound changes undertaken during solo leave may then explain the more persistent changes in fathers' time allocation after the leave has ended.

The results are clear and robust to alternative specifications despite the small number of fathers whose time allocation was observed before and after they took parental leave. However, the small case numbers restrict the possibilities to explore whether the effect of taking parental leave differs between groups of fathers. As more waves of SOEP and FiD become available, future research will be able to conduct more elaborate studies exploring, for example, differences by fathers' level of education, child parity, and region of residence.

Another limitation of this study is that the estimates on time spent in housework and childcare are based on self-reported time use, and respondents are known to overestimate their time spent in these activities in self-reports. This does not bias the results if fathers consistently overestimate their time in unpaid work or if the extent of overestimation varies randomly. But the results could be biased if fathers have a greater tendency to over-report the time spent on housework and childcare after taking parental leave. Without comparable time diary data, it is not possible to assess whether this is the case. But the fact that fathers not only increase their time in domestic work after taking parental leave but also reduce their time spent on paid work supports the assumption that the shift in time use is real, as self-reported working hours have been found to be consistent with working hours obtained from time diaries (Juster, Ono and Stafford, 2003).

Comparing the findings of this study with results from other countries is difficult because previous studies differed in design and dependent variables used. Nonetheless, the findings of this study are consistent with previous findings from Sweden (Haas and Hwang, 2008; Duvander and Jans, 2009), the United States (Nepomnyaschy and Waldfogel, 2007), and the United Kingdom (Tanaka and Waldfogel, 2007), which show that taking parental leave (for at least 2 weeks) encourages greater father involvement in childcare and shorter paternal working hours.

Authors of previous studies expressed concern that their results could be biased because they were cross-sectional in design and thus at risk of interpreting selection of family-oriented fathers into parental leave as causal effects. Using panel data, this study tackled selection by comparing the behaviour of the same fathers before and after they took parental leave rather than drawing conclusions by comparing fathers who took leave with fathers who did not. Yet, surprisingly, a comparison of

fixed-effects with OLS models revealed no evidence that fathers who took parental leave were already less involved in paid work and more involved in childcare and housework before taking parental leave than other fathers. Selection hence appears to play a much smaller role than expected.

The German parental leave reform is still too recent to determine whether fathers' reallocation of time will last or whether it is restricted to the first few years after taking parental leave. Future research needs to determine whether the effects persist or diminish as children grow older. Furthermore, it is unclear whether fathers' greater involvement at home results in disadvantages on the labour market. For mothers, taking parental leave is associated with lower earnings and reduced career opportunities, and research from the United States and Sweden suggests that these caregiver penalties may be even more pronounced for fathers (Albrecht *et al.*, 1999; Coltrane *et al.*, 2013). Many German fathers hesitate to take parental leave because they fear negative effects on their careers (BMFSFJ, 2007). Future research should therefore determine whether fathers' reallocation of time from paid work to domestic work has negative repercussions on their labour market opportunities.

Notes

- 1 This restriction means that only first-time fathers who take parental leave immediately after childbirth are excluded from the sample, as their time allocation cannot be observed after the transition to parenthood but before parental leave. The time allocation of first-time fathers who take parental leave when their child is a few months old can be observed in the period between the birth of the child and the beginning of the parental leave period. These fathers are included in the sample, as are fathers who have an additional child and take parental leave for this additional child.
- 2 Of the 86 fathers who took parental leave within the observation period, 78 only took full-time parental leave, 6 only took part-time parental leave, and 2 used a combination of both. Additional analyses showed that all results were robust against excluding part-time parental leave episodes.
- 3 For example, one could assume that the birth of a child affects leave-taking fathers differently than non-leave-taking fathers. Because of underlying differences in gender role attitudes, the former may increase their participation in childcare whereas the latter do not, which would bias the effect of leave uptake. By including only observations after the transition to parenthood into the sample, this study aims to limit possible bias from such selection effects. However, without including interaction effects between leave uptake and child parity, it cannot rule out that leave-taking fathers increase their time in childcare to a greater extent than non-leave-taking fathers after the birth of an additional child.
- 4 The effect sizes resemble the effects from the correlational study by Duvander and Jans (2009). Yet, they are considerably larger than the effects of parental leave on earnings found by Rege and Solli (2013) and Cools, Fiva and Kirkeboen (2015). One reason for this discrepancy could be that fathers primarily reduced unpaid overtime after parental leave.

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Supplementary Data

Supplementary data are available at *ESR* online.

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